

for Macintosh

Canon

Plug-in Module CS-U3.3



for CanoScan FB630U/FB636U Color Image Scanner

User's Guide



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How to Use this Guide

This guide explains how to use the Canon Plug-in Module CS-U 3.3 (herein referred to as Plug-in Module CS-U) with application programs supporting CanoScan FB630U/FB636U, such as Canon Photo.

A plug-in is used within a compatible application program like Canon Photo to expand its functionality and cannot be used as a stand-alone application. By only installing the Plug-in Module CS-U from the Canon Creative Image CD-ROM, Plug-in Module CS-U can be simply plugged into the parent program and add the ability to scan.

Before using Plug-in Module CS-U, we strongly recommend reading this guide and keeping this CD-ROM in a safe place for later reference.

Where to Look

Quick Start Instructions → p. 9

The Quick Start Instructions is a brief summary of commands and procedures that will assist in using Plug-in Module CS-U immediately.

Scanning Preparations (Required Reading) → p. 12

All users should read this section to learn the procedures for adjusting magnification and scan mode settings in preparation for scanning.

Scanning (Required Reading) → p. 27

All users should read this section to learn the procedures for scanning and saving images.

Adjusting and Editing Scanned Images → p. 33

Read this section for details about how to use Canon Photo to adjust image brightness, color tone, and other attributes. You can read this section according to your needs.

About the Conventions Used in this Guide

The following conventions are used in this guide to draw your attention to important information.



CAUTION:

This symbol is used to highlight procedural precautions and limitations. Always read these topics to avoid errors.



HINT:

This symbol is used to present helpful hints and supplemental information. Reading these topics is recommended to enhance your enjoyment of Plug-in Module CS-U.

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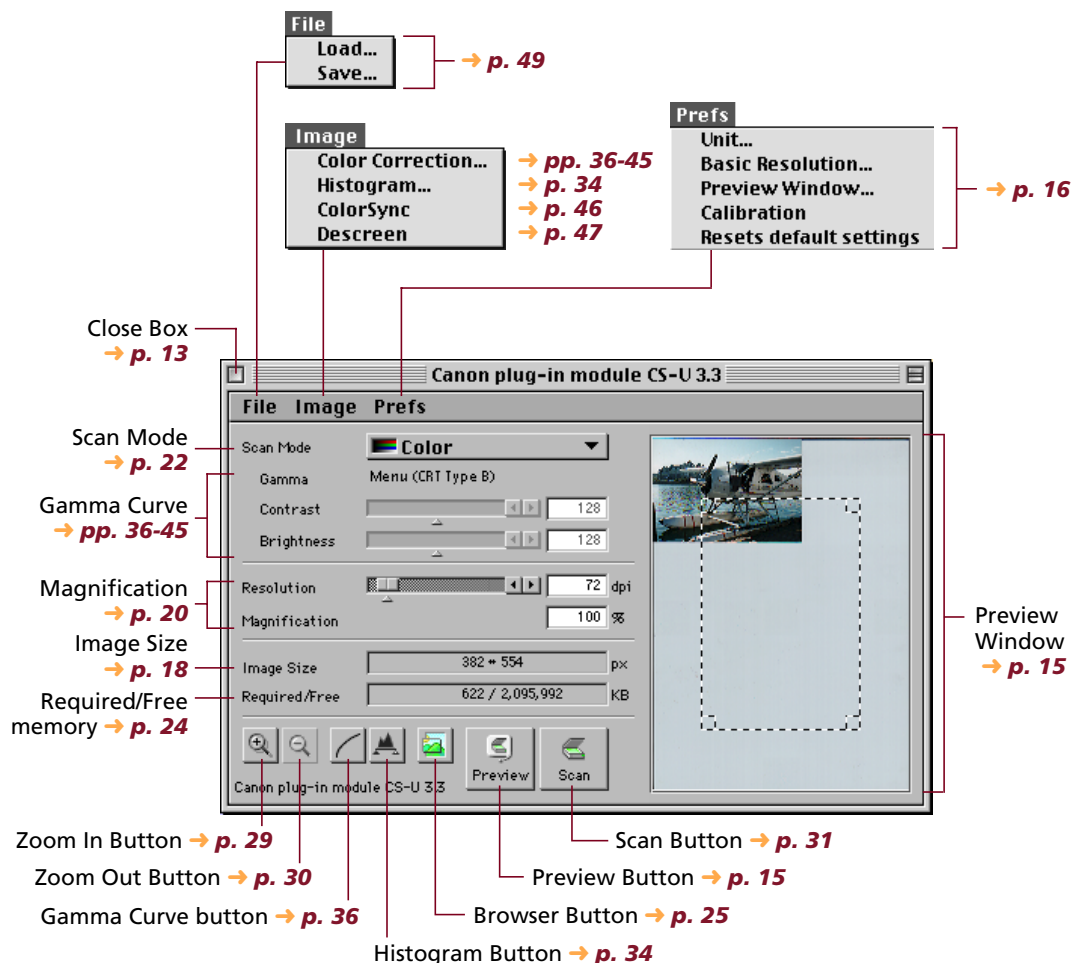
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Control Panel Features

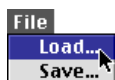
When you need more information about an operation panel button or menu, refer to the illustration below and go to the referenced page number for more details.

- There may be some differences in the screen below, depending on the version of Plug-in Module CS-U provided in your package.



HINT

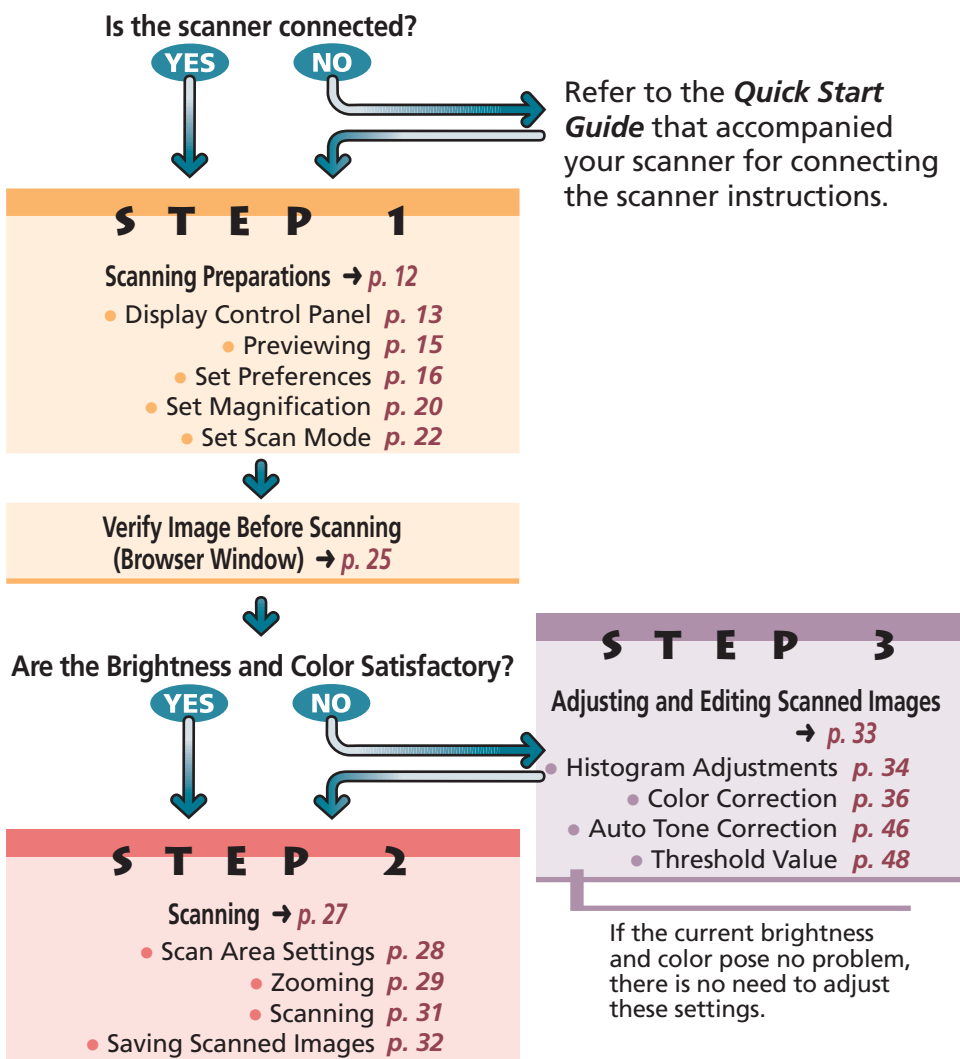
In this guide, menu items are marked in the following manner:



Select [Load] from the [File] menu.

Scanning Procedures

Follow these procedures to use Plug-in Module CS-U.



Plug-in Module CS-U Special Features

- **See the Results of Adjustments Immediately (Dynamic Preview)**

Once in preview mode, the results of adjustments to scan mode settings and colors are promptly reflected in the preview image.

Highly detailed adjustments can be performed easily because you can see the results of your changes as they are executed.



- **Supports ColorSync™ 2.0 or higher Auto Tone Correction**

Supports ColorSync for the Macintosh operating system. Achieves superior color quality by automatically compensating for and aligning the tones of various devices, such as scanners, color displays and color printers.



- **Browser Function Permits Confirmation of the Real Image Before Scanning**

The Browser function lets you check the image to be scanned in detail before commencing the scan. This function presents a much higher quality image than the preview function.



- **Histogram Function Realizes Beautiful Contrast**

Simple operation allows you to achieve beautiful contrast with half-tone gradations.



- **Gamma Curve Adjusts Image Brightness**

The Gamma Curve feature provides four methods you can use to refine in detail the level of image brightness until you are satisfied with the results.



- **Works within Image Processing Software for Easy Image Editing**

Plug-in Module CS-U can be used to extend the functions of plug-in compatible image processing application programs.

Quick Start Instructions

Those who wish to start scanning immediately should follow the procedures below. If you require further information at any stage, read the pages referenced at each step.

Installing Plug-in Module CS-U



Follow the instructions described in the *Quick Start Guide* to install the software.


Start Plug-in Module CS-U → p. 13



1. Connect the scanner to the computer, then start Canon Photo.
2. Select [CanonPI CS-U 3.3.0...] as the image source (this step is only required the first time the scanner is used with the program).
3. Select Get From Scanner. Select CanoScan FB630U/FB636U. Then click Get Pictures Now.
 - Plug-in Module CS-U will start and display its control panel.

Start the Preview Scan → p. 15



1. Place the materials to be scanned on the scanner.
2. Click the [Preview scan] button ().
 - The entire document glass area will be scanned and displayed in the preview scan window.



Preview Window

Plug-in Module CS-U automatically calibrates itself the first time the preview or scan button is clicked. The scanner will run by itself for a few moments without displaying an image in the window. This does not constitute a breakdown. The calibration results are stored until the computer power is shut off.

Set the preferences, magnification and scan mode settings.

→ pp. 16-24

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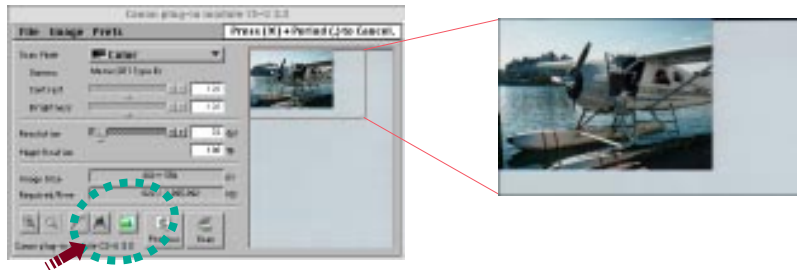
- The preference settings provide settings for how the system operates. (p. 16)
- The magnification setting determines how you want the image enlarged or reduced. (p. 20)
- The scan mode setting determines the kind of image you want to scan: black and white, gray, or color. (p. 22)

Verify Image Quality with the Browser Function Before Scanning → p. 25

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1. Click the [Browser] button.

- The Selection Frame will appear.



2. Move the Selection Frame to specify the area of the image you want verified and click the mouse button.
 - Plug-in Module CS-U will read the image and display the browser image.
3. After you have examined the browser image, click the mouse anywhere.

Specify the Area of the Image to be Scanned → p. 28

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1. Select the area to be scanned by clicking and dragging the mouse pointer over the image.

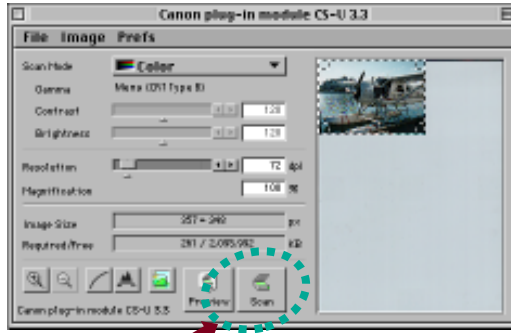
- You may find it convenient to use the zoom feature to select small areas or to select specific scan areas with precision. (p. 29)



Scan the Image → p. 31

7

1. Click the [Scan] button.

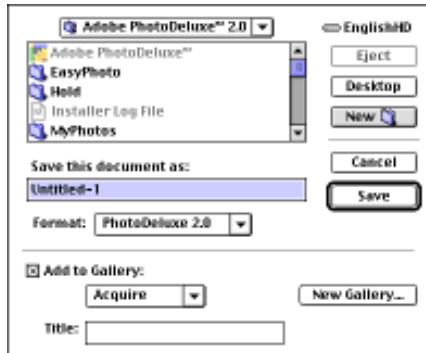


- Plug-in Module CS-U will scan the image.
- When the scan is complete, the Plug-in Module CS-U control panel will close. In Canon Photo, the image will appear.

Save the Scanned Image → p. 32

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1. Save the image with the application software, specifying a folder, file name and file format.



S T E P 1

Scanning Preparations

*Step 1 presents the essential preparations for scanning.
The following procedures are explained on the indicated pages.*

Display Plug-in Module CS-U Control Panel → **p. 13**

Setting the document on the scanner
and pre-scan → **p. 15**



Previewing → **p. 15**



Set Preferences → **p. 16**

Set Magnification → **p. 20**

Set Scan Mode → **p. 22**



Verify Image Before Scanning → **p. 25**

Display Plug-in Module CS-U Control Panel

All scanning operations are performed with the Plug-in Module CS-U control panel. To quit Plug-in Module CS-U, click the close box at the top left of the control panel.

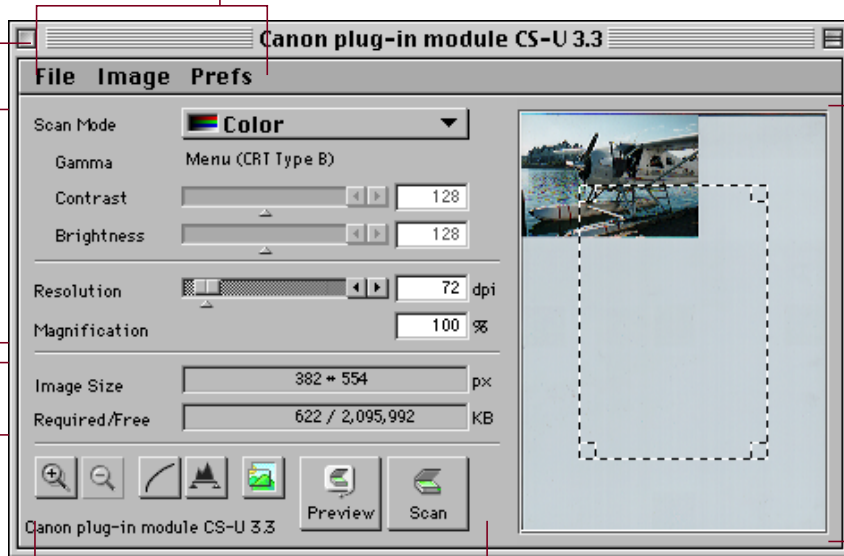
Adjust the settings for the scan mode, image quality, magnification, etc.

Close Box

Quit Plug-in Module CS-U.

Menu Bar

Click any menu item to display more options in a pull-down menu.



Buttons

Use these buttons to change the zoom setting and scan images.

The image display size and disk size that were specified in the Preview window are automatically displayed here.

Preview Window

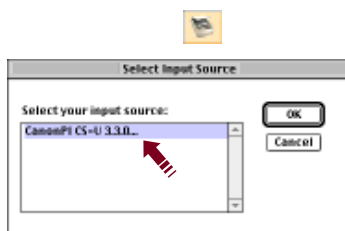
Displays the image in preview mode.

Operating Procedures

- 1 Verify that the scanner is attached to your computer properly.
- 2 Start Canon Photo or Photoshop.
- 3 Select Plug-in Module CS-U from within Canon Photo or Photoshop.

<Canon Photo>

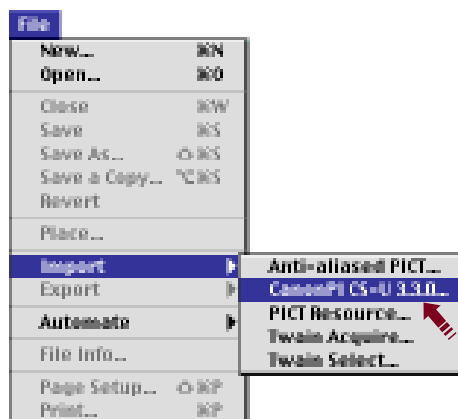
1. Select [Get from Scanner], and then select CanoScan FB630U/FB636U.
2. Click [Get Pictures Now].
Then, in the Get Pictures dialog box, click [Open Them].



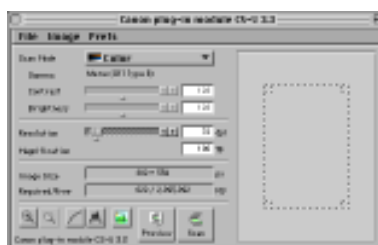
The version of Plug-in Module CS-U shipped with your package may differ from that pictured above.

<Adobe Photoshop>

1. Choose the [File] menu, [Import] and [CanonPI CS-U 3.3.0].



The Plug-in Module CS-U control panel will appear.



Caution

Plug-in Module CS-U cannot be operated as a stand-alone program. Always start it from within an application program, such as Canon Photo or Adobe Photoshop.

Previewing



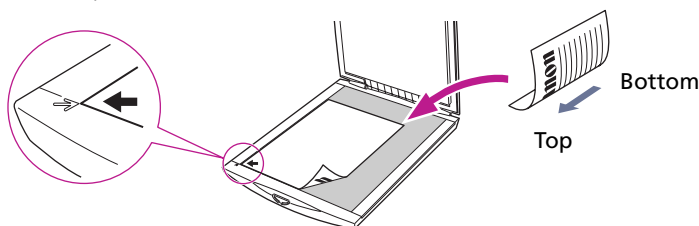
You can pre-scan the original before it is actually scanned and acquired by the parent application. Because the pre-scanned image is temporary, the entire platen is scanned. The pre-scanned image is displayed in the preview window where the quality of the image can be adjusted or cropped for actual scanning.

Operating Procedures



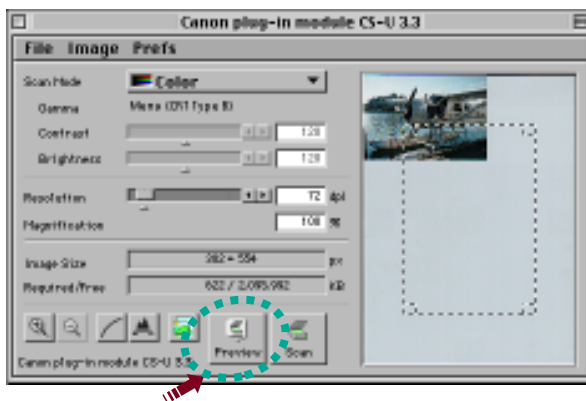
Set the original on the scanner document glass.

- Open the scanner document glass cover, set face down the side of the page you want to scan with the top edge of the page toward you, and align with the marks as shown in the illustration.
- Set the original on the document glass and close the cover carefully so it does not shift out of position.



Click the [Preview] button.

- The image will be read and the image will appear in the Preview window.



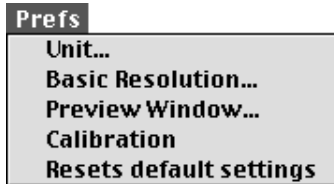
Hint

- For details about the types of originals you can set on the scanner document glass for scanning, refer to the *Quick Start Guide*.
- The Preview window can be adjusted to a larger size (p. 17).
- The Dynamic Preview function enables changes to settings, such as the scan mode and brightness, to be immediately reflected in the preview image.
- Nevertheless, the preview image provides only an approximation of the scan and the final results may differ to some degree from the preview image.

Set Preferences

You can set preferences for the operating environment which will be used for every scanning job until you change them. Some of these settings include units of measure for the display, basic resolution, size of the preview window.

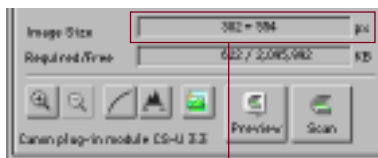
You can also return all the settings to their default values. These settings are performed in Preferences menu of the operation panel.



Unit

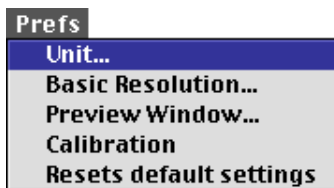
Specifies the units that define the size of the scanned image.

Unit Dialog Box

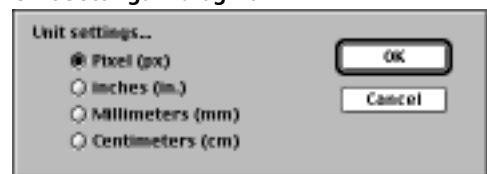


The units displayed in this section of the control panel will change.

Click the [Prefs] menu in the control panel and select [Unit]. The Unit Settings dialog box will appear.



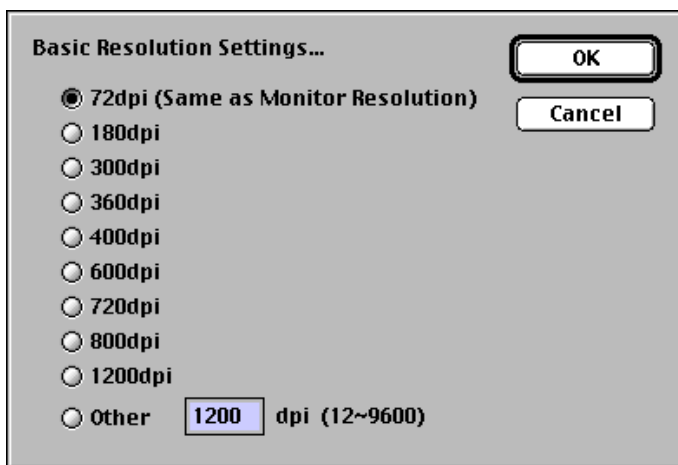
Unit Settings Dialog Box



Select the desired settings.

Setting Basic Resolution

The resolution setting sets the output resolution for printing and displaying the image. If you select the [Other] button you can enter the resolution setting (12 to 9600) directly into the entry box.



basic Resolution Setting Dialog Box

When the image is output to a printer, to a Bubble Jet printer in the color or gray mode, for example, the basic resolution of the printer is halved. For example, for a 360 dpi printer the basic resolution is set for 180 dpi. If you use the black & white mode or use a color laser printer, the same resolution of the printer is used. For example, if the printer resolution is 300 dpi, the basic resolution is set to 300 dpi. As for the display resolution, 72 dpi (Macintosh display 72 dpi) is sufficient.

This resolution is used as the basic for setting magnification so it is called "basic" resolution.



Hint

- Once the basic resolution is set, you do not have to set it again for every scanning job. However, if you change the destination printer, or change the scanning mode, you should adjust the standard resolution setting.

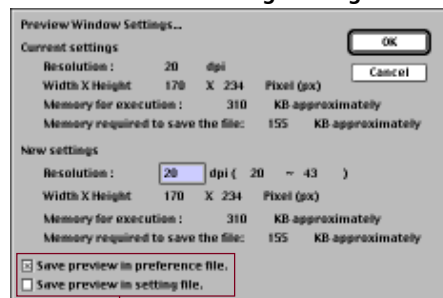
Preview Window Size

Changes the size of the preview window. If you enlarge the size of the preview window, then the resolution is increased. You can specify whether or not to save the pre-scanned image with the preferences file or the settings file.



Click the [Prefs] menu in the control panel and select [Preview Window]. The Preview Window Settings dialog box will appear.

Preview Window Settings Dialog Box



Click the check box to determine whether the preview image is saved in the preference file or the settings file.



Caution

- Changing the Preview window size will cause the image previously displayed in the Preview window to disappear.
- The maximum size of the area that you can specify depends on the size and other characteristics of your monitor.



Hint

- If the “Save preview in preference file” option is selected, the last preview image will appear in the Preview window when Plug-in Module CS-U is launched again after quitting once. This reduces the steps required to rescan the same image repeatedly.
- If the “Save preview in setting file” option is selected, the preview image will be saved in a settings file. This is convenient when you wish to keep the settings associated with a particular image.
- Difference Between the Preferences File and Settings Files.
Plug-in Module CS-U creates two kinds of files to keep track of settings. The various settings that are adjusted with the control panel are automatically saved in the preference file, which is located in the System folder. These settings determine how Plug-in Module CS-U behaves when it is restarted. In contrast, settings files are intended for saving particular groups of settings that are used often. The names of settings files can be freely chosen by the user. See Saving/Recalling Settings (p. 47).

Calibration

If the scanner's color balance is out of equilibrium, select [Calibration] to start the adjustment process. Calibration automatically adjusts the scanner to read standard white as white.

Return to Default Settings

Returns the preference settings and all other settings to the factory default settings. The tables list the major default settings.

Scan Mode	24-bit Color
Gamma setting	Menu setting (CRT type for B)
Magnification	100%
Unit	Pixels
Basic resolution	72 dpi
Preview Window size	20 dpi
Control Panel Position	Center

Click the [Prefs] menu in the control panel and select [Resets Default Settings]. The Default Settings dialog box will appear.



Click the [Yes] button if you wish to proceed. Otherwise click the [No] button.

Procedures



Select the [Prefs] menu in the control panel.

The Settings pull-down menu will display.

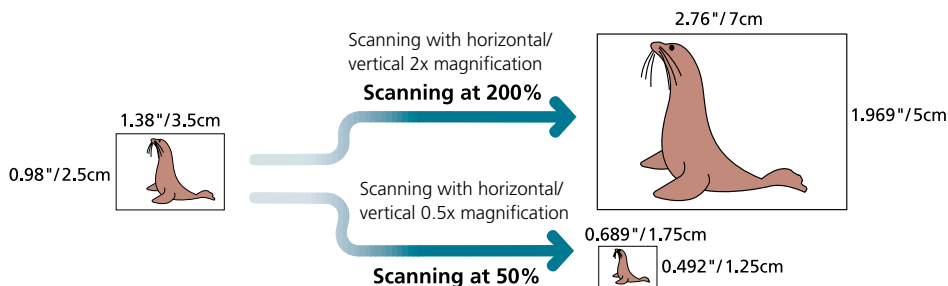


Select the desired option from the pull-down menu.

- Selecting any one of the Units, Basic Resolution or Preview Window options displays the respective dialog for it. Choose the desired value in the dialog and select [OK] to change the setting.
- A confirmation dialog will display if Resets default settings is selected. The settings will be reset if [Yes] is selected in that dialog.

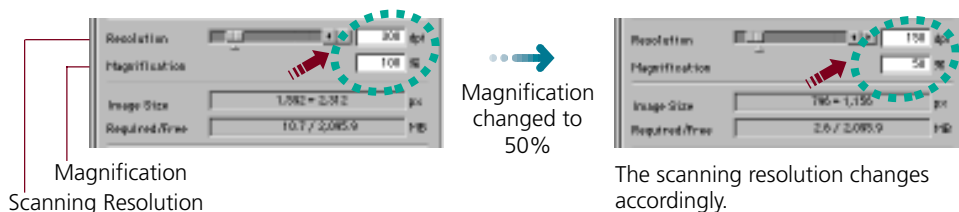
Set Magnification

The magnification of an image can be changed before scanning to accommodate reproductions that are larger or smaller than the original. The settings can be changed in increments of 1%. While the size of an image can be changed through other means, enlarging an image during the scanning process can save time by eliminating unnecessary steps.



Changing the magnification setting causes the resolution display on the control panel to change correspondingly. This resolution setting is referred to as the "scanning resolution."

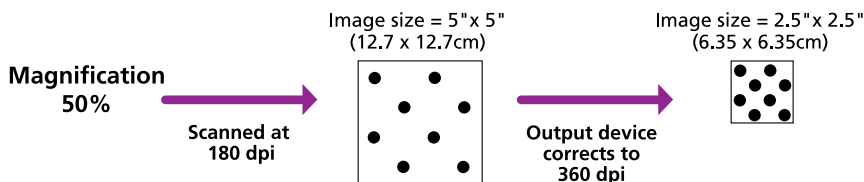
Output Device Resolution= 360 dpi, Magnification= 100%



Hint

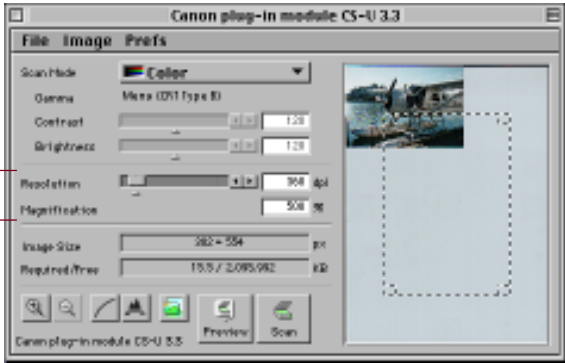
Magnification and Resolution

Why does the image size change with the magnification? Let us answer this with an example using an "BJ (360 dpi)" output device. If you were to scan an image with this device setting and set the magnification factor to 50%, the scanning resolution will automatically change to 180 dpi. At this setting, the image will be scanned at a resolution of 180 dpi and the output device will convert this to 360 dpi, shrinking the size of the output in the process because it will only have half the data with which to fill the space.



To Set the Magnification Factor

Set the desired magnification factor on the control panel.



Slider
Drag the slider bar in either direction or use the arrow keys to change the resolution.

Click here to return the magnification factor to 100%.

Click inside these boxes to enter values directly.



Hint

The Relationship Between Data Volume and Scanning Resolution

The higher the magnification and scanning resolution settings, the greater the file size of scanned images. There are certain inconveniences associated with overly large data volume, such as the inability to fit a file on a single floppy disk and the risk of causing a temporary computer slowdown by overwhelming its processing capabilities. For example, if you scan a standard size photograph in the color mode, the amount of data varies according the resolution.

3.54 x 5.12 in. image



580KB

100dpi

2.3MB

200dpi

5.2MB

300dpi

21MB

600dpi

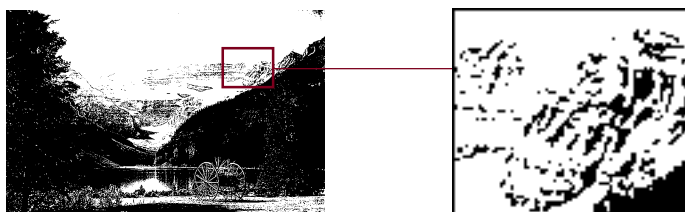
* These numbers are approximate estimates and may differ from actual scan results.

Set Scan Mode

When an image is scanned, it is read as a collection of “dots.” The scan mode that is selected determines how each of these dots is represented in the output. The following five scan modes are available.

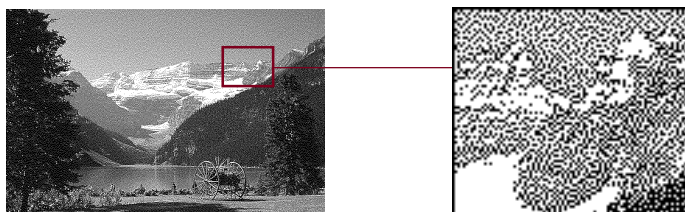
Black & White

Displays each dot as either black or white. Grays and halftones are also reproduced as black or white. The Black & White mode is best for documents that contain text and line drawings and not suited for images with color gradations.



Diffusion Dither

Displays each dot as either black or white. In order to create gray tones this method uses randomly dispersed black dots on white to create a more natural looking gradation.



Grayscale

In the Grayscale mode, each dot is formed by assigning it eight individual “bits” of data. By combining these bits in various different ways, a dot can be expressed in over 256 distinct shades. Photographic images are reproduced relatively naturally in this mode, but the file size is much larger than that produced by the Black & White mode.



Color

In the Color mode, each dot is formed by assigning it eight individual bits of data to represent each of the RGB or red, green and blue colors, which add up to 24 bits. In this mode, a dot can be expressed in approximately 16,770,000 distinct shades. This mode is useful for reproducing color prints, but generates files that are even larger than the Grayscale mode.



High Definition Color

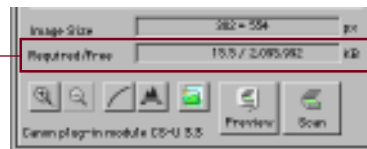
Select for the best possible color quality. Scanning at this setting will be slightly slower than color mode.



Hint

Scanning the same image in the three different scan modes produces different file sizes. By size, Black & White mode requires the least disk space, followed in order by the Grayscale mode and the Color mode. Before scanning, check the data volume indicator on the control panel.

The numerator indicates the amount of disk space required for the scanned image while the denominator indicates the amount of disk space available. When the required space exceeds the available space, the scan button is unavailable.

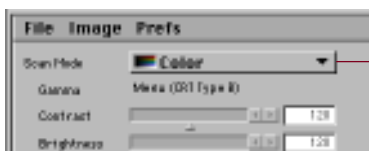


To Set the Scan Mode



Select the Scan Mode box on the control panel and choose the desired scan mode.

Scan Mode is displayed in the pull-down menu.



Selecting the box opens the pull-down menu.



Select the scan mode that you want.

Verify Image Before Scanning



Before initiating the final scan, it is advisable to check the intended results with the Browser function. The image in the Browser window is more accurate than the one in the Preview window, allowing you to verify the results more precisely before scanning.

To Verify the Image

1

Set the magnification and scan mode to the appropriate settings (*pp. 20-24*).

2

Click the [Browser] button.

- The Selection Frame will appear on the Preview window to enable a portion of the image to be selected.
- The size and shape of the Selection Frame cannot be changed because it is automatically determined by the scanning resolution setting.



Hint

The Browser button is disabled when the image area is unspecified or is too small (less than approximately 64 x 64 pixels).

3

Move the pointer in the selection frame inside the preview window.

- The mouse cursor will change to a "+" sign shape.

4

Move the Selection Frame to the desired position with the mouse cursor.

- Moving the mouse will move the Selection Frame.

5

Click the mouse button when the Selection Frame is in the correct position.

- The image will be read and the browser image displayed in the middle of the monitor.



6

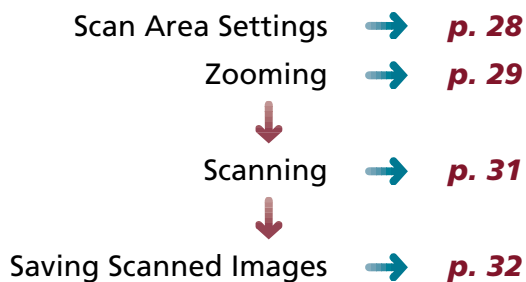
Once you have examined the browser image, click the mouse button again to close the Browser window.

- The Browser window will close.
- It does not matter where the mouse cursor is positioned to close the Browser window.

S T E P 2

Scanning

*Step 2 presents the procedures for conducting the final scan,
saving the scanned image in a file and editing image files.
Follow these procedures to perform scanning jobs.*



Scan Area Settings

Using the image in the preview window, you can define the actual area to be scanned.

Operating Procedures



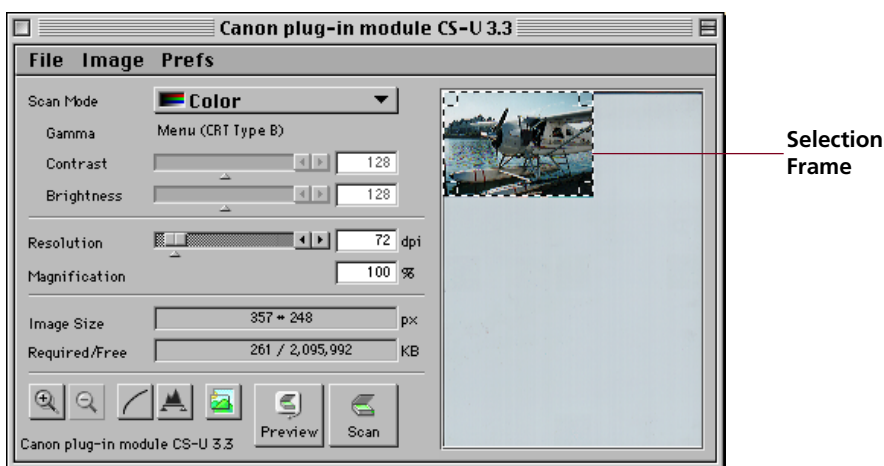
Position the pointer in the preview window.

The + symbol marks the current position of the pointer.



Click the mouse button and drag the mouse in the direction you want to define on the image as a frame.

The selected area is enclosed in a dotted frame. The area enclosed in this dotted frame is the area that will actually be scanned.



- Clicking the mouse button outside the Selection Frame causes the selected area to be deselected.
- Change the position of the Selection Frame by moving the pointer inside it, as it changes into an omni-directional arrow [+]. Clicking and dragging the cursor in this state will cause the Selection Frame to move without changing its shape.
- Placing the mouse cursor over the dotted line of the Selection Frame causes the cursor to change into one of four shapes [↓] [←] [↘] [↗]. Dragging the Selection Frame with the mouse cursor changes the shape of the Selection Frame.
- Double-clicking the mouse button anywhere in the Preview window selects the entire image.



Hint

- To specify small areas with precision, it is convenient to expand the preview display with the Zoom In button. See Zooming on the (P. 29).

Zooming



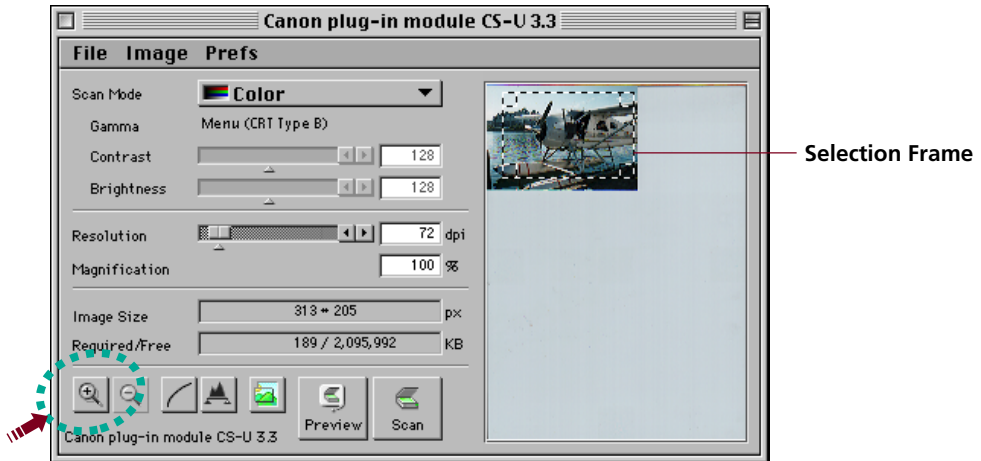
You can specify a selected area of the image for enlargement with the Zoom features. You can use the zoom function to select an area with high precision, or to select small areas for scanning.

To Zoom In




Select the area you want to enlarge with the zoom function.

See operating procedures (p. 28).



Hint

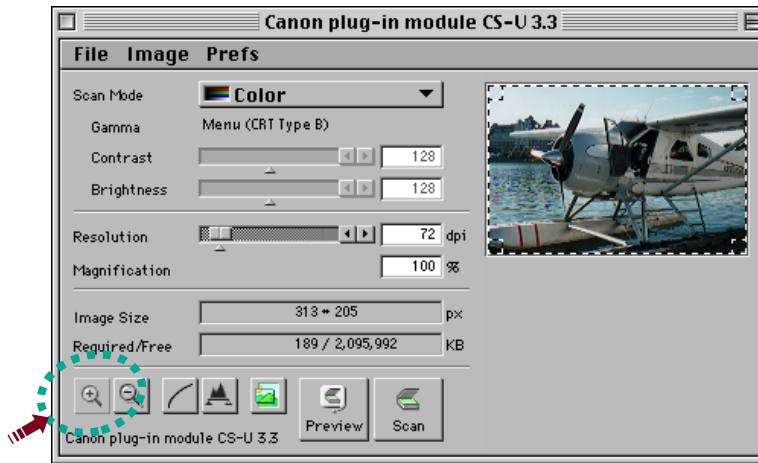
- The Zoom In button can't be activated unless an area has been selected in the Preview window.
- You can zoom an area of the screen continuously in up to seven steps. The Zoom in button [] cannot be clicked if the selected area is too small.

2

Click the [Zoom In] button [].

The selected area will be displayed in expanded form.

If you want to enlarge the image again, reduce the size of the area selected with the frame and click the [Zoom In] button again.



3

To return to normal view, click the [Zoom Out] button [].

Scanning



Once you have set the magnification and scan mode, you may proceed with the scan. Once the scan is complete, Plug-in Module CS-U automatically closes and returns to the application software, such as Canon Photo. The following provides an example of scanning from within Canon Photo.

To Initiate the Scan

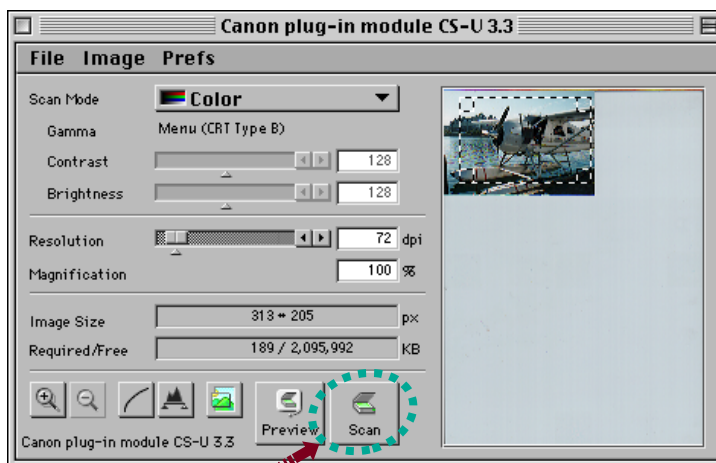


1 Specify the Scan Area.

See Operating Procedures (p. 28).




2 Click the [Scan] button.



- The image will begin to be scanned.
- When complete, the Plug-in Module CS-U control panel will close and the Save file dialog box will display. To save an image file, see Saving Scanned Images (p. 32).



Hint

- The scan button [] cannot be clicked if the scan area is set too small (less than 64 x 64 pixels) or not specified.
- The scan cannot be performed if the required memory is larger than the free memory.

Saving Scanned Images

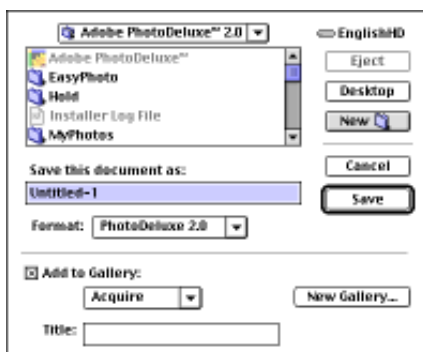
After an image has been scanned, the data should be saved in a file to a disk using Canon Photo.

To Save an Image

After the scan is complete, save the image in Canon Photo.

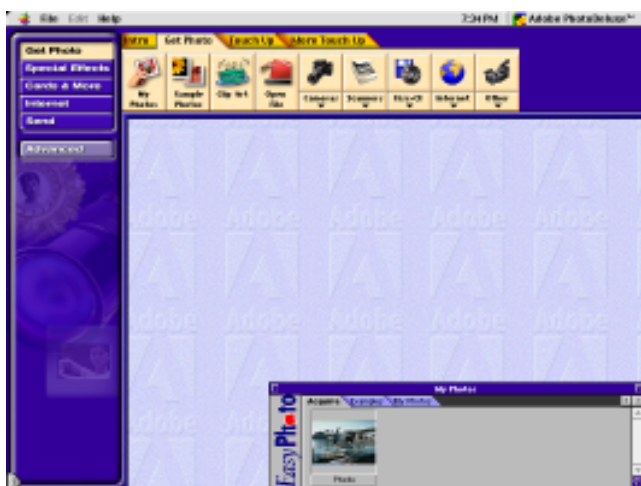


Specify the folder and file name that you wish to use for the image in the Save this document as: dialog box.



Click the [Save] button.

- The final scan will start. When the scan is completed, the image will be saved and its thumbnail will display in the [My Photos] window.



Adjusting and Editing Scanned Images

Scanned images may be corrected for brightness and color tone or edited in a variety of ways.

The potential adjustments vary with the type of scan mode utilized in the original scan.

Adjustments to the scanned image may be made after the image is previewed.



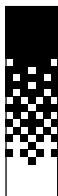
Color/High Definition Mode

- Using the Histogram Feature to Adjust Image Contrast → **p. 34**
- Color Correction: Gamma Settings → **p. 36**
- Color Correction: Brightness and Contrast Settings → **p. 38**
- Color Correction: Adjusting Gamma with the Menu → **p. 40**
- Color Correction: Gamma Value Settings → **p. 42**
- Color Correction: Tone Curve Settings → **p. 44**
- Auto Tone Correction (ColorSync™) → **p. 46**



Grayscale Mode

- Using the Histogram Feature to Adjust Image Contrast → **p. 34**
- Color Correction: Gamma Settings → **p. 36**
- Color Correction: Brightness and Contrast Settings → **p. 38**
- Color Correction: Adjusting Gamma with the Menu → **p. 40**
- Color Correction: Gamma Value Settings → **p. 42**
- Color Correction: Tone Curve Settings → **p. 44**



Diffusion Dither

- Color Correction: Gamma Settings → **p. 36**
- Color Correction: Brightness and Contrast Settings → **p. 38**
- Color Correction: Adjusting Gamma with the Menu → **p. 40**
- Color Correction: Gamma Value Settings → **p. 42**
- Color Correction: Tone Curve Settings → **p. 44**



Black & White Mode

- Brightness Settings for Black & White Images (Threshold Value) → **p. 48**
- Descreen → **p. 47**
- Saving/Recalling Settings → **p. 49**
- Editing Scanned Images → **p. 51**
- Scanning Techniques → **p. 52**

Using the Histogram Feature to Adjust Image Contrast



The data comprising an image contains a variety of brightness settings ranging from shadows to highlights. These settings are represented in Plug-in Module CS-U by values ranging between 0 and 255. The difference in these values determines the image's contrast. To show how much of the image data falls into each brightness setting, Plug-in Module CS-U contains a Histogram feature that shows this data distribution clearly. With the Histogram you can adjust the level of shadows and highlights to achieve beautiful tones with the best possible contrast.

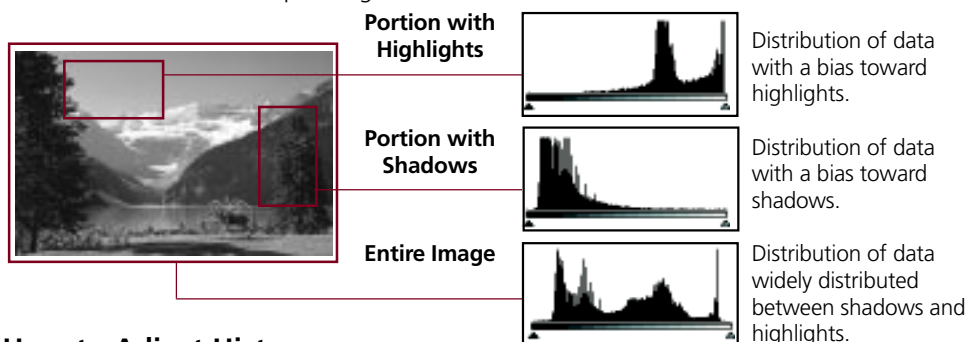


Hint

- You may not alter the histogram for images scanned in the Color mode when ColorSync is active or for images scanned in the Black & White mode.
- You can use the Histogram only with grayscale, color or high definition color images.

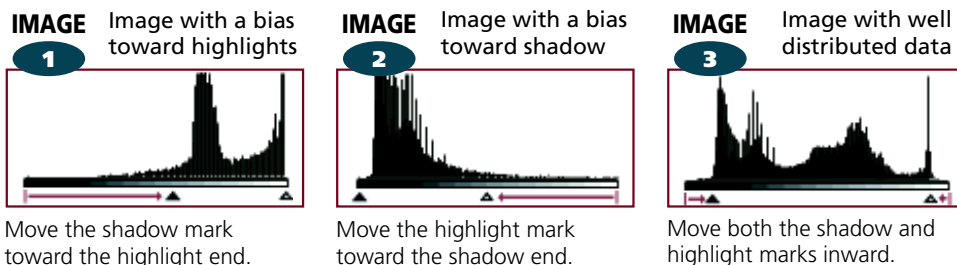
How to Interpret Histograms

You can select the entire image or specify an area for which a histogram will be generated. The height of the peaks of the histogram is directly related to the volume of data with the corresponding value.



How to Adjust Histograms


To change the contrast in an image, the distribution of data between shadows and highlights can be adjusted by dragging the shadow and highlight marks at the bottom of the histogram. All of the data lying to the outside (left) of the shadow mark is changed to a zero value and all of the data lying to the outside (right) of the highlight mark is changed to a 255 value. The examples below show adjustments to improve the contrast. Use the Auto setting to adjust the Histogram for most jobs (p. 35). The graphs below show images adjusted with the Auto setting.



To Adjust a Histogram

1 Specify the area of the image (the entire area to be scanned) for which a histogram will be generated. See **Scan Area Settings** (p. 28).
The histogram will not display correctly if an extremely small area is selected. To select small areas, first expand the display with the Zoom In button. See **Zooming** (p. 29).

2 Click the **[Histogram]** button ().
The Histogram dialog box will display.

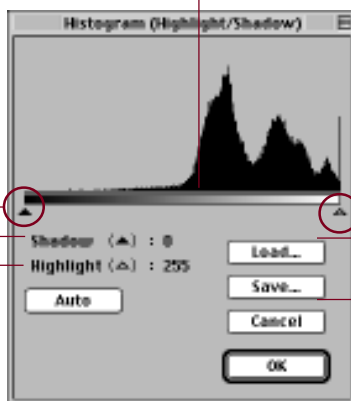
3 Click the **[Auto]** button ().
Although you can freely move the shadow mark and highlight mark to another position, the image can be adjusted easily for optimum effect with the Auto button.

Clicking directly on this bar causes the shadow or highlight mark, whichever is closest, to advance to that position.

Shadow Mark

All of the data to the left of this mark is set to the shadow (0) value. Drag the mark to the right or left.

These boxes, respectively, display the brightness values corresponding to the position of the shadow and highlight marks. These values can be specified by typing directly in the boxes or by clicking on the arrows.



Highlight Mark

All of the data to the right of this mark is set to the highlight (255) value. Drag the mark to the right or left.

The histogram settings can be saved in a file and reloaded for later use.

4 Click the **[OK]** button.
The preview image will change according to the values specified with the histogram.



Hint

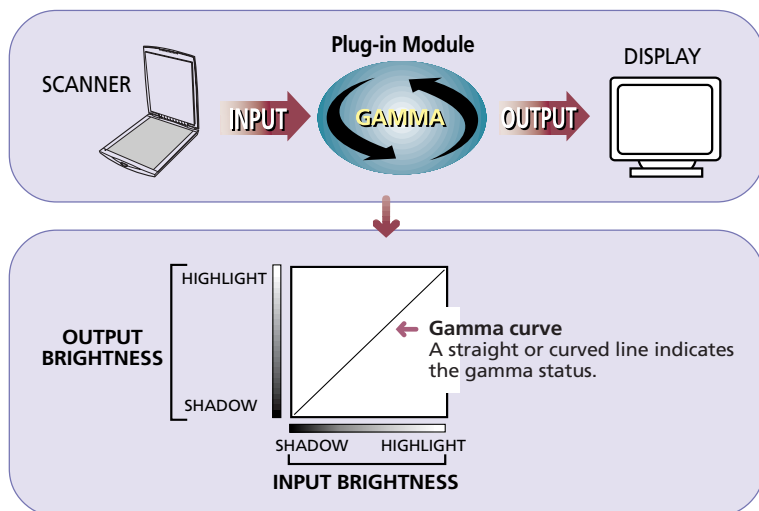
The Histogram dialog box can also be displayed by selecting **[Histogram]** from the **[Image]** menu.

Adjusting the Image with Gamma Settings



An image scanned with Plug-in Module CS-U is a composite of individual square dots. Each dot contains information that defines its level of brightness. Plug-in Module CS-U can manipulate this data and reproduce adjusted images on the screen. This type of data conversion is referred to a gamma adjustment.

The data created when the scanner scans an original is called input; the image displayed on the screen is called output. When this input and output data are plotted on the same curve, this is called a gamma curve. By changing the gamma curve, you can adjust the brightness of an image.



Setting the Gamma

You can use one of four methods available in the Color Correction dialog box to set the gamma curve. A description of each method is provided on the following pages.

Using the slider bar — Adjusts the brightness and contrast of the original image. (p. 38)

Setting the gamma value — When you cannot do the optimum setting with the menu. (p. 42)

Using the menu — Set to match the display type. (p. 40)

Setting the graph — Fine adjustment of the gamma graph. (p. 44)



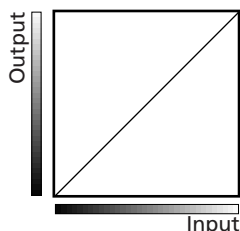
The settings you perform in the Color Correction dialog box can be saved to a file and opened again whenever you need them.

The Relationship Between the Gamma Curve and Image Brightness

Gamma curve values fall with a range of 1 to 255. A gamma value of 1 appears as a straight line in the gamma graph, and if the value is any value other than one, the line on the gamma graph will appear curved. The relationship between the shape of the gamma curve and image brightness is explained below.

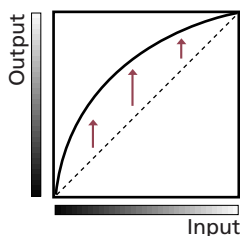
Gamma = 1

Input and output are equal and the gamma curve appears as a straight line, and the input image is displayed on the screen without adjustment.



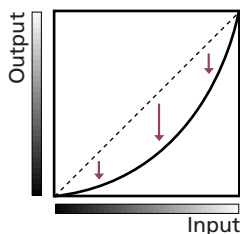
Gamma < 1

The data bends upward from the input shadow to highlight into the output area bending the curve up and making the adjusted image brighter in the display.



Gamma > 1

The data bends downward from the input shadow to highlight away from the output area bending the curve down and making the adjusted image darker in the display.



CAUTION

- The gamma curve cannot be adjusted for a high definition color image that has been set with ColorSync because the tone adjustment is performed automatically.
- The gamma curve cannot be adjusted for a Black & White (Line) image because mid-tones are shown as either black or white. To adjust the brightness of a Black & White image, use the threshold setting. (p. 48)

Brightness and Contrast Settings

You can adjust the gamma curve with two slide bars, one for contrast and one for brightness. Use this method to adjust an image before scanning if it is slightly out of focus or too dark.



Hint

You cannot use this feature with a Black & White (Line), color or high definition color file that has been set with ColorSync™.

Contrast

Contrast is the difference between the lightest light and the darkest dark in the image. A high contrast setting creates a great difference between light and dark shades, and there is a very sharp distinction between light and dark areas of the image. A low contrast setting creates a small difference between light and dark shades and the distinction between light and dark areas of the image are not so obvious.

Contrast = 128 (Normal)



Contrast = 170



Contrast = 100



If the image appears slightly out of focus, increase the contrast setting for a sharper image. However, if the contrast setting is too high, shadows will blacken and the highlights will wash out.

Brightness

Brightness is the overall lightness or darkness of an image without changing the contrast. Adjust the brightness setting to change the overall lightness or darkness of the entire image. However, if the brightness setting is too high, the highlights will wash out, and if too low the shadows will blacken.

Brightness = 128 (Normal)



Brightness = 190



Brightness = 80



To Adjust the Brightness and Contrast

1




[] Click the [Gamma] button.
The Color Correction dialog opens.



2

Click the check box for Slider Setting then use the slider bar to set the brightness and contrast.

Slider

[] Drag the button to the left or the right or click the left or right arrow [] [] to change the setting.

Check Box



Shows the changes in the values as you move the slider

3

Click the [OK] button.


The image in the preview windows immediately reflects the changes.



Hint

- You can also open this dialog box by pulling down the Image menu in the operation panel and selecting Color Correction.
- If you select Slider Setting in this dialog box, you can also use the operation panel slider to make the settings.

Adjusting Gamma with the Menu

[] You can select the display type with the menu and set the gamma curve. Use this feature when you see the brightness of the original image does not match the brightness of the image in the preview window or browser. In the menu if you can select CRT Type A, CRT Type B, or CRT Type C, or Linear, the optimum gamma settings will be performed for you automatically.



Hint

- You cannot use this feature with a Black & White (Line), color or high definition color file that has been set with ColorSync™.
- The gamma settings of display are intended to produce effects that emulate the reproduction of color tones that appear natural to the human eye. In order to achieve this and be able to accurately reproduce the tones of the original on the display, the display scanner gamma value must match the gamma value of the display.

CRT Type A

Select if the CRT Type B setting displays an image that is too bright.

CRT Type B

Use for a Macintosh display.

CRT Type C

Select if the CRT Type B setting displays an image that is too dark.

Linear

Select to restore the gamma setting to 1.



Hint

- If all the settings above produce an image of brightness that does not compare favorably with the original, calculate the reciprocal value of the display gamma value and enter the reciprocal value directly to perform the setting. (p. 42)

To Change the Gamma Value Settings

1

[] Click the [Gamma] button.
The Color Correction dialog box opens.



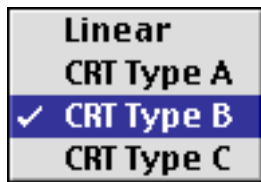
2

Click the radio button for Menu Setting.

Radio button



Click this button to pull down the menu.



3

Click the [OK] button.


The image in the preview window changes to reflect the change in this setting.

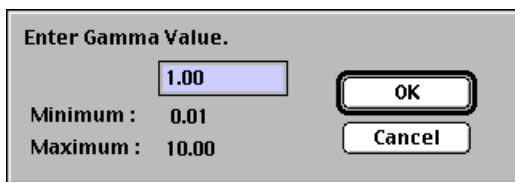


Hint

- You can also open this dialog box by pulling down the Image menu in the operation panel and selecting Color Correction.

Gamma Value Settings

[] You can also set up the gamma curve by directly entering the gamma value (0.01-10.00). Use this method when you cannot adjust the gamma value with the menu (p. 40).



Enter Gamma Value.

1.00

Minimum : 0.01

Maximum : 10.00

OK

Cancel



Hint

- You cannot use this feature with a Black & White (Line), color or high definition color file that has been set with ColorSync.

Adjusting the Gamma Value to Match the Display

Normally the gamma setting does not have to be adjusted because Plug-in Module CS-U has been pre-set with the menu setting to match a true Macintosh display (CRT Type B). However, if you are using another display and after you adjust the gamma value with the CRT Type A or CRT Type C setting, and the images are still too light or too dark, then use the calculation method below to calculate and set the reciprocal value of the display value.

$$\frac{1}{\text{Display gamma value}} = \text{Plug-in Module CS-U gamma value}$$

→ For a display gamma value of 1.8 ...

$$\frac{1}{1.8} = 0.56$$

Sending Output to a Printer

The gamma value does not have to be adjusted for output to a color printer because the printer driver settings are set to match the display, and matching the gamma setting of the display does not present a problem. Similarly, the gamma setting does not have to be done for a monochrome printer. For fine adjustment, view the image on the display to view the results of your output.



Hint

- If you do not know the gamma setting of your display, refer to the manual provided with purchase of the display. If you do not find the gamma value in the manual, or if the manual is not available, contact the manufacturer of your display.

To Change the Gamma Value Settings

1

[] Click the [Gamma] button.
The Color Correction dialog box opens.






2

Click the radio button for Gamma Value Setting and set the gamma value.



Resets the value to 1.00

Slider

[] Drag the button to the left or the right or click the left or right arrow [] [] to change the setting.

Reflects the value of the setting selected with the slider bar. Without using the slide bar, you can also enter the value directly by clicking the value to change it.

3

Click the [OK] button.

The image in the preview window changes to reflect the change in this setting.



Hint

- You can also open this dialog box by pulling down the Image menu in the operation panel and selecting Color Correction.

Tone Curve Settings

You can edit the gamma curve directly by changing the shape of the line on the graph. When you change the gamma setting by manipulating the curve, you can perform fine adjustments in the brightness of only the shadows, only the highlights, or both the shadows and highlights.

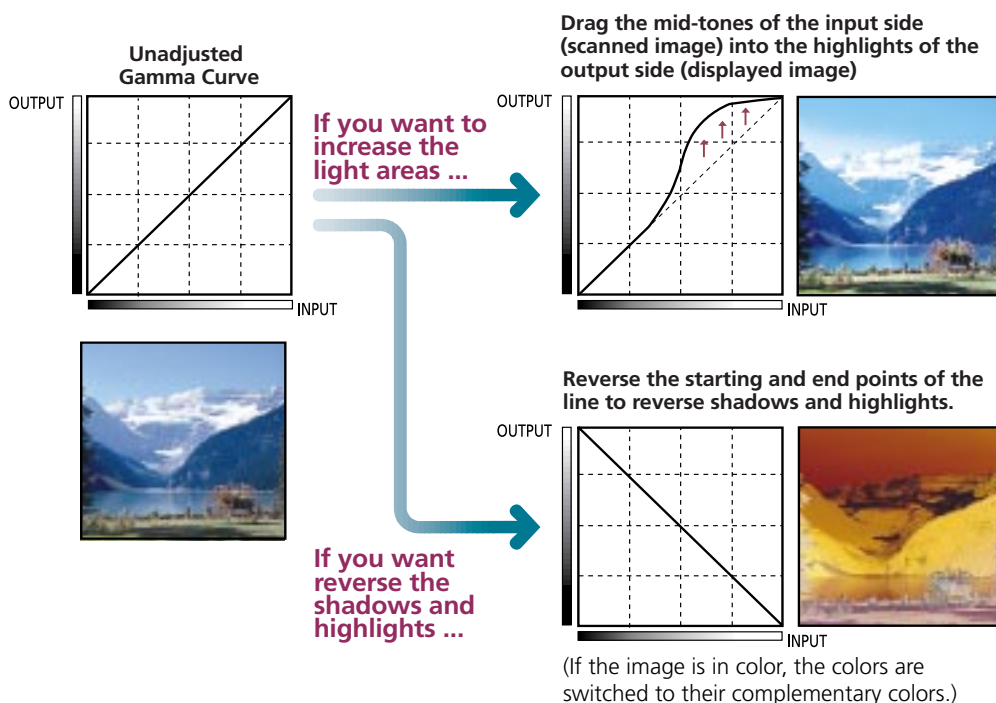


Hint

- You cannot use this feature with a Black & White (Line), color or high definition color file that has been set with ColorSync.

Manipulating the Graph

The following example show you how to manipulate the graph to change the gamma settings. This is only an example. When you test these settings yourself, you can see the changes in the gamma settings immediately reflected in the preview window or the browser to achieve many interesting effects.



To Edit the Tone Curve

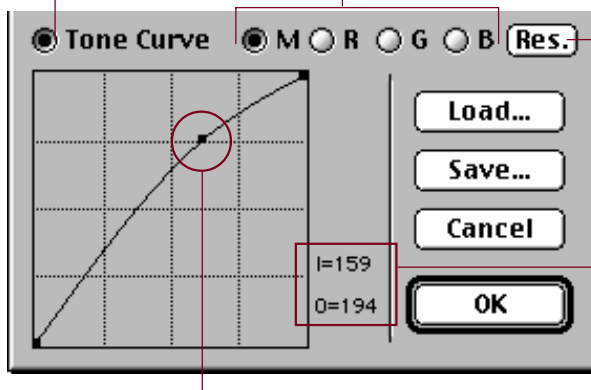
- 1  Click the [Gamma] button.
The Color Correction dialog box opens.



- 2 Click the radio button for Tone Curve and adjust the gamma setting.

You can adjust the setting for each channel: R (red), G (green), B (blue) or M (RGB or grayscale). You can adjust each channels independently. (You can adjust RGB only for a high definition color image.)

Radio button



Resets the gamma curve to a straight line.

Shows the input and output level at the point under the pointer (control point) in the graph, expressed as a value from 1 to 255 where 1 is the darkest and 255 the lightest. [I] is for input and [O] is for output. If the output level is larger than the input level, this results in a lighter image.

To create a control point on the line, just click any location on the line. After a control point is displayed in the line you can drag it in any direction. As you drag it to another location, the gamma value changes. You can set several control points on the gamma curve.

- 3 Click the [OK] button.
The image in the preview window changes to reflect the new settings.



Hint

You can also open this dialog box by pulling down the Image menu in the operation panel and selecting Color Correction.

Auto Tone Correction (ColorSync™)

When the scan mode is set to color and high definition Color, color correction is automatically conducted by the ColorSync™ function. The ColorSync™ function automatically matches the tones produced and displayed by scanners, displays and color printers. Optimal color correction is achieved with ease without having to make adjustments with the histogram or other color correction functions.



Caution

More time is required to start the program and scan when the ColorSync™ function is activated.



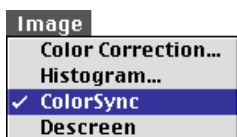
Hint

- ColorSync™ responds differently to each computer according to the unique conditions affecting it (type of display used, etc.), which may cause differences even between computers of the same make and system version. The tone characteristics of an image scanned with ColorSync™ on one computer, therefore, may change when processed on another computer.
- Color correction using the histogram function and gamma value settings can't be conducted when the ColorSync™ function is activated.

To Activate the ColorSync™ Function



Click the [Image] menu and the [ColorSync] option in the control panel.



Color correction will occur automatically. Auto tone correction requires some time to process.

Descreen

Moiré patterns occasionally appear when items printed at low resolutions are scanned. Moiré patterns are dot-like patterns that interfere with processing images for professional use and are usually caused by poor dithering resulting from scanning images from newspapers, books, magazines, etc. To reduce this phenomenon, scan photographs and other low-resolution prints with the descreen activated. Shut it off to scan higher resolution items. The default setting is “off”.



Caution

- The Descreen cannot be switched on for scanning resolutions higher than 601 dpi.
- The previous setting is enabled for the Descreen when Plug-in Module CS-U is opened by a software application operating in the windowless mode.

Procedure



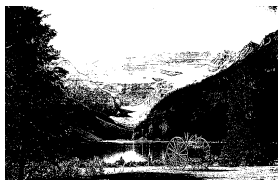
Open the [Image] menu and select [Descreen].



Brightness Settings for Black & White Images (Threshold Value)

When the scan mode is set to Black & White (Line), the image brightness can be adjusted. The threshold value setting determines whether a half tone will be expressed as a black or a white data point. The possible threshold values range between 1 and 255. Below a given threshold value, all data is converted to black. Likewise, all data with a value above the threshold is converted to white. Accordingly, higher threshold values produce darker images while lower threshold values result in brighter images.

Threshold Value = 128 (Standard)



Threshold Value = 180



Threshold Value = 70

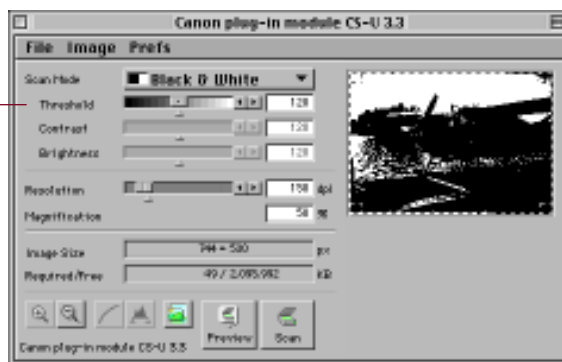


To Set the Threshold Value



Set the threshold value in the Control Panel.

The threshold value adjustment categories will only appear when the scan mode is set to Black & White (Line), the image brightness can be adjusted.



Drag the slider left or right or click on the left or right direction arrows to change the threshold value to the desired setting.



Click the arrow to restore the default values. (128)

The value in the box will change as the slider or direction arrows are moved. A value may also be input directly into the box without moving the slider.



Hint

The changes will be reflected in the preview image.

Saving / Recalling Settings

The scan mode, resolution and preference settings can be saved to a settings file and recalled for future processing. The user may freely assign a name to the settings file. It is convenient to save frequently used settings in a file.



Hint

In addition to settings, the settings file may also be used to store preview images. It is useful to save the preview image with the settings to quickly grasp to which image the settings apply (**p. 18**).

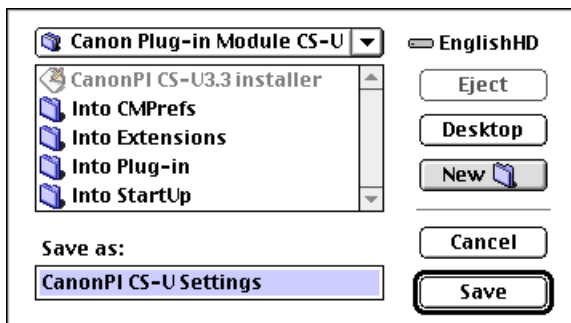
To Save Settings in a Settings File



Click the [File] menu in the control panel and select the [Save] option.



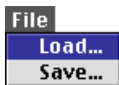
Specify the folder and file name.



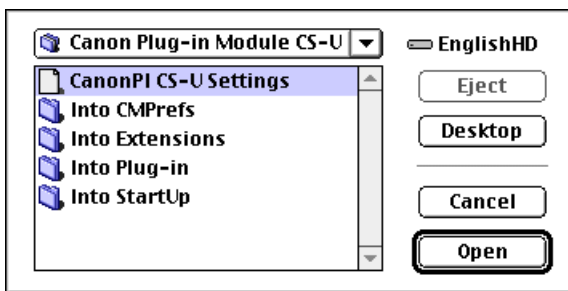
Click the [Save] button.

To Recall a Settings File

- 1 Click the [File] menu in the control panel and select the [Load] option.



- 2 Specify the file to open.



- 3 Click the [Open] button.
The settings in the operation panel are replaced by the savings stored in the settings file.

Editing Scanned Images

Scanned images can be edited as required using Canon Photo and Photoshop®. In this example, we provide a simple demonstration of how to use the filter functions of Kai's Power Tools®, a plug-in module for Photoshop®. Refer to the manuals accompanying each application program for more detailed explanations.

Many special effects may be achieved with filters.

[Filter] menu
KPT2.1, KPT Vortex Tiling 2.1



[Filter] menu
KPT2.1, KPT Pixel/Breeze 2.1



Original



[Filter] menu
KPT2.1, KPT Gaussian Static 2.1



[Filter] menu
KPT2.1, KPT Glass Lens/Standard 2.1

Scanning Techniques

Matching Scan Resolution to Purpose

ScanGear CS-U provides many choices for resolution. What resolution you choose depends on your output device, how you want to use the image, the type of image, and your scanner.

In general, it is recommended that you scan the image at a higher resolution than you need. That way, you retain the amount of information in the image, and if necessary you can reduce the resolution in the imaging application, after the image has been scanned and acquired.

Different types of images need different types of scan settings. However, after a certain point, increases in scan resolution will not improve the output image quality. For example, a text image can be scanned at 600 dpi for output to a 600 dpi laser printer, but a color image should be scanned at 180 dpi to be output to a color BJ-printer. When the image is output to a Bubble jet printer in the color or grayscale mode, for example, the basic resolution of the printer is halved. For example, for a 360 dpi printer the basic resolution is set for 180 dpi.

- If your image is Black & White with no shades of gray, such as line art, scan in Black and White mode.
- If you are scanning continuous-tone black and white photographs, charcoal drawings, or any original with shades of gray, scan in Grayscale mode.
- For full-color images, such as photographs or illustrations, scan in Color mode.
- With OCR applications using Black & White scan mode, more than 300 dpi is the recommended scan resolution.
- The minimum scanning width and height will vary according to the selected scan resolution. For example, at 75 dpi, the minimum size for previewing is 9 pixels per side, which is approximately 0.12 inch or 0.30 centimeter per side. The minimum at 300 dpi is 35 pixels, which is also approximately 0.12 inch or 0.30 centimeter per side.

Optical and Enhanced Resolutions

Optical resolution refers to the amount of information a scanner can sample per inch. Different varieties of scanner feature different optical resolutions. The maximum optical resolution of the CanoScan FB630U or FB636U is 600 dpi for the primary scan (horizontal dimension of the document) and 1200 dpi for the secondary scan (vertical dimension).

Appendices

Troubleshooting	➔	p. 54
Error Messages	➔	p. 56
Glossary	➔	p. 57
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Customer Care Center	➔	p. 61

Specifications

System Requirements

See *Quick Start Guide*

Functional Specifications

Interface:	USB (for use with USB ports supplied as standard equipment with the computer)
Scan Modes:	Black & White, Diffusion Dither, Grayscale, Color, and High Definition Color
Gradation processing	Diffusion Dither (Black & White only)
Tone Settings:	255 Gradations
Contrast Settings:	255 Gradations
Density Settings:	255 Gradations (only for Black & White Line mode)
Gamma Curve:	Gamma Curve May Be Edited
Scanning Resolution:	Non-stepped between 12 dpi and 9600 dpi

* These specifications are subject to change without notice.

Troubleshooting

Please refer to the following information if you encounter a problem using Plug-in Module CS-U. For further details, refer to the troubleshooting sections of the *Product Guide* electronic manual or the Troubleshooting item on the CD-ROM provided with your scanner.

If your problem lies outside the solutions provided below, consult the retail outlet from which you purchased the software or the closest **Canon Customer Care Center**.

Hint



- Before you call for assistance, read the Quick Start Guide or Product Guide.
- When you contact one of the help desks listed, you will be asked what kind of computer is connected with the scanner. Before you call, make sure you have prepared the information required on the system information page in the Quick Start Guide.



Problem: Plug-in Module CS-U does not appear on the Import menus for Canon Photo

- **Solution:** Plug-in Module CS-U is not correctly installed on your hard disk drive. Refer to the *Quick Start Guide* and reinstall the software



Problem: The image will not appear even if the Preview button is clicked on the Plug-in Module CS-U control panel

- **Solution 1:** Make sure the original is set on the document glass correctly
- **Solution 2:** The brightness settings for Plug-in Module CS-U may be set too high. Try lowering the brightness settings. For details about setting the gamma curve, see *Adjusting the Image with Gamma Settings* (p. 36)
- **Solution 3:** The threshold setting for Plug-in Module CS-U may be set to high. Try lowering the threshold setting. For details about setting the threshold setting, see *Brightness Settings for Black & White Images (Threshold)* (p. 48)

**Scan button cannot be selected**

- Solution 1: A scan cannot be performed if the scan area is set too small (less than 64 x 64 pixels). Increase the size of the scan area
- Solution 2: A scan cannot be performed unless a scan area is specified. Specify a scan area
- Solution 3: A scan cannot be performed if the required memory is larger than the free memory. Change the resolution (**p. 17**) or scan area (**p. 28**) until the required memory is lower

**Problem: The “Insufficient Memory” error message appears when scanning**

- Solution 1: Select the smallest possible area and rescan
- Solution 2: Lower the resolution and magnification settings for the output device to the lowest possible values (**p. 17, 20**)
- Solution 3: Close all other software applications other than Canon Photo, then try scanning again
- Solution 4: Close all software applications including Canon Photo, then restart Canon Photo and scanning again
- Solution 5: Shut down Canon Photo and all other applications and increase the amount of free memory, then start Canon Photo again.
- Solution 6: Increase the amount of RAM as required

Error Messages

Error Message	Cause	Response
Scanner is Not Detected	<ul style="list-style-type: none"> • USB cable not connected correctly. • Scanning unit is locked (lock switch is not released) 	<ul style="list-style-type: none"> • Use the USB cable to connect the Macintosh to the scanner properly. • Release the lock switch at the base of the scanner
Cannot Communicate with Scanner	<ul style="list-style-type: none"> • USB cable not connected correctly. 	<ul style="list-style-type: none"> • Ensure the USB cable is securely fastened to the Macintosh and scanner.
Minimum Memory Requirements Not Met. Retry after Increasing Free Memory.	<ul style="list-style-type: none"> • Memory is insufficient for the required volume of the scanned image data. 	<ul style="list-style-type: none"> • Reduce the scan area to the minimum possible scope and lower the resolution and magnification settings for the output device. • Close all application programs that are running other than Canon Photo. • Increase the memory allocated to Canon Photo.
Home Position Not Detected	<ul style="list-style-type: none"> • Lock not released. • The lamp is burnt out. 	<ul style="list-style-type: none"> • After releasing the lock, temporarily disconnect the USB cable. Reconnect it and restart Plug-in Module CS-U 3.3. • Contact your nearest <i>Canon Customer Care Center</i>.
File Access Error (FB63U Button Manager) Error Code = 36	<ul style="list-style-type: none"> • Plug-in Module CS-U is already installed. 	<ul style="list-style-type: none"> • Reinstall after emptying the Trash.
An error has occurred. (Sense Code=xx, Additional Sense Code=xx, Additional Code Condition=xx)	<ul style="list-style-type: none"> • Another error has occurred. 	<ul style="list-style-type: none"> • Note down the Sense Code, Additional Sense Code and error message and contact the nearest <i>Canon Customer Care Center</i>.

Glossary

8-bit Gray Image (Grayscale)

An image created using the 8-bit Grayscale mode. Each dot of the image is allocated 8 bits of data, allowing a single dot to be expressed in one of 256 distinct shades.

24-bit Color Image (Color, High Definition Color)

An image created using the 24-bit Color mode. Each dot of the image is formed by allocating 8 bits of data to each of the red, green and blue (RGB) channels for a total of 24 bits. Each channel can produce up to 256 colors, providing the potential of approximately 16.7 million color tones.

Brightness

The amount of light in an image when it is scanned. Increasing the Brightness setting makes the entire image lighter, and decreasing the Brightness setting makes the entire image darker (p. 38).

Contrast

The degree of difference between the dark and light portions of a document being scanned. Raising the contrast of an image tends to sharpen it, lowering the contrast tends to blur it (p. 38).

Dot

The fundamental element of a letter, object or image. The number of dots per inch (dpi) determines the resolution (or density) of a letter, object or image.

Diffusion Dither

One of the methods used to simulate tones in black and white images. First, the darkness of the original greyscale image is checked and the mid-range tones are judged to be either black or white. Then the difference between the original density and converted density is calculated and black dots are dispersed randomly over the entire image to simulate graduated shading (p. 22).

Gamma Correction

The process whereby variations in color tones from the output of monitors, printers and other output devices are made consistent with the source (input) document. In Plug-in Module CS-U you can use the gamma curve menu setting, or enter a gamma value directly, to set a value to match the gamma value for your monitor. Gamma values are expressed as numbers: 1 is the standard value, numbers lower than 1 brighten the output and numbers higher than one darken the output. A graph function, the Tone Curve (gamma curve), is also available in Plug-in Module CS-U to make adjustments to gamma values (p. 36).

Gamma Curve

See the entry for Gamma Correction.

Image File

A computer file generated by scanning an image or by creating an image with an image editing software program, such as Photoshop®. An image file is generally comprised of bitmap data, a collection of color information corresponding to each dot of an image. There are many formats for image files, including the TIFF, PICT and BMP formats.

Preview

See the entry for Scanning.

Resolution

An expression of the density of dots in an image file that indicates the extent of its granularity. Generally expressed as the number of dots per inch (dpi).

RGB

An acronym for the base colors red, green and blue used in varying combinations to reproduce the full spectrum of colors on monitors and other output devices. These colors are often referred as the base or primary colors.

Scanner

A device which scans a physical image from paper or other media and converts it to digital data which can be read by a computer.

Scanning

The process of using a scanner to read an image electronically. Before the final scan, a preview scan is generally conducted. The preview scan encompasses the entire scope of the document glass area and only provides a general indication of the image that may differ from the final scan. The final scan is executed after specifying the area of the image to be scanned and various settings that determine how the scan is conducted.

Tone Curve

See the entry for Gamma Correction.

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